Blind Can Read Any Book with Aid of Electric Eye

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Blind Can Read Any Book with Aid of Electric Eye

FOR the first time in history the blind can now read any printed book. An electric eye in the "printing visagraph" virtually confers the gift of sight upon the sightless. It instantly transcribes the ordinary print of a book into raised, magnified letters that can be read with the finger.

The machine, recently exhibited in New York City by the inventor, Robert E. Naumburg, of Cambridge, Mass., resembles an office desk. When a book is inserted, an electric eye in a rolling carriage of brass roams back and forth across the printed page. What the "eye" sees is reproduced in embossed letters upon a roll of aluminum foil at the machine's right. A blind young woman who had practised only thirty days upon the machine amazed spectators by reading a book as fast as the raised letters jumped up one by one beneath her fingers.

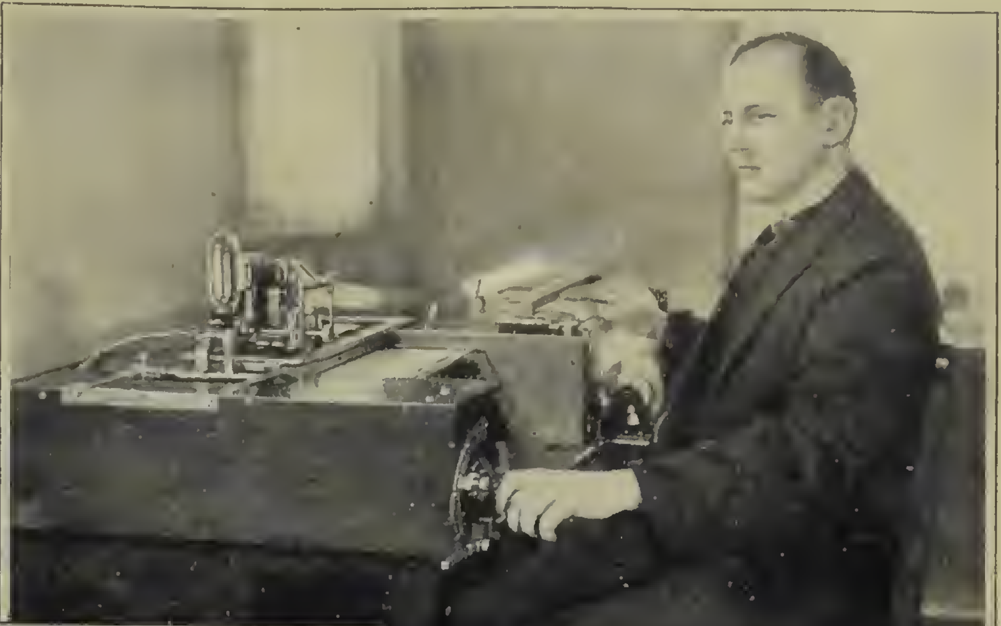
After being read with the finger tips, the aluminum sheet may be preserved for future reference or it may be run through a pair of rollers like a clothes wringer, flattening out the letters, so it can be used again.

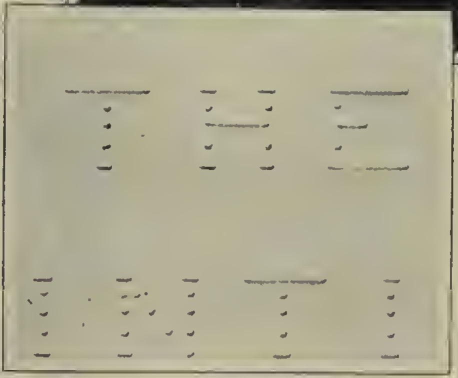
How the machine is able to reproduce ink-printed letters in raised type is shown in the diagram on this page. The principle is simple. Two parts compose the machine—a transmitter and a printer. The transmitter reads the book. Its impulses are forwarded to the printer, which copies the letters in dots and lines upon the aluminum strip as the printing carriage moves across it from left to right.

This is done by drawing six tiny beams of light, arranged in a vertical row, along the printed line at the transmitting end. Each beam is a sort of exploring feeler for one of six printing bars in the printer; the lowest one, for example, finds the tails of letters like "p's" and "g's." When one of the exploring beams strikes the black part of a letter, it energizes the corresponding printing bar. The bar then imprints a dot or line on the aluminum, depending on how long it is held in action.

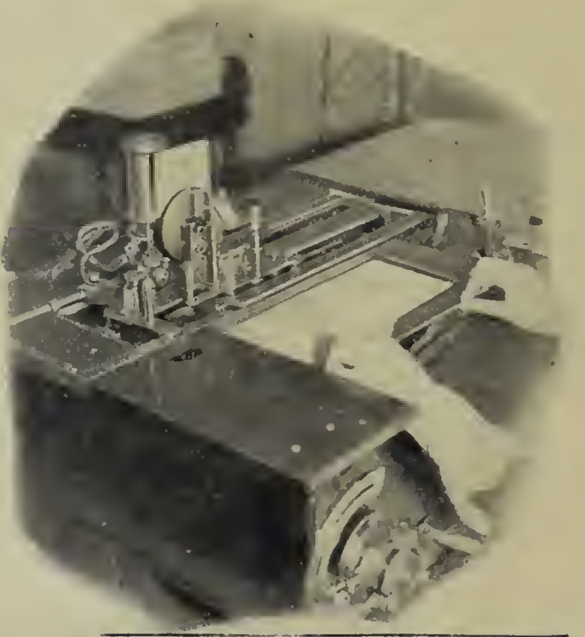
A blind person can make the adjustments needed in inserting a book, and operate a lever that shifts the eye from line to line.

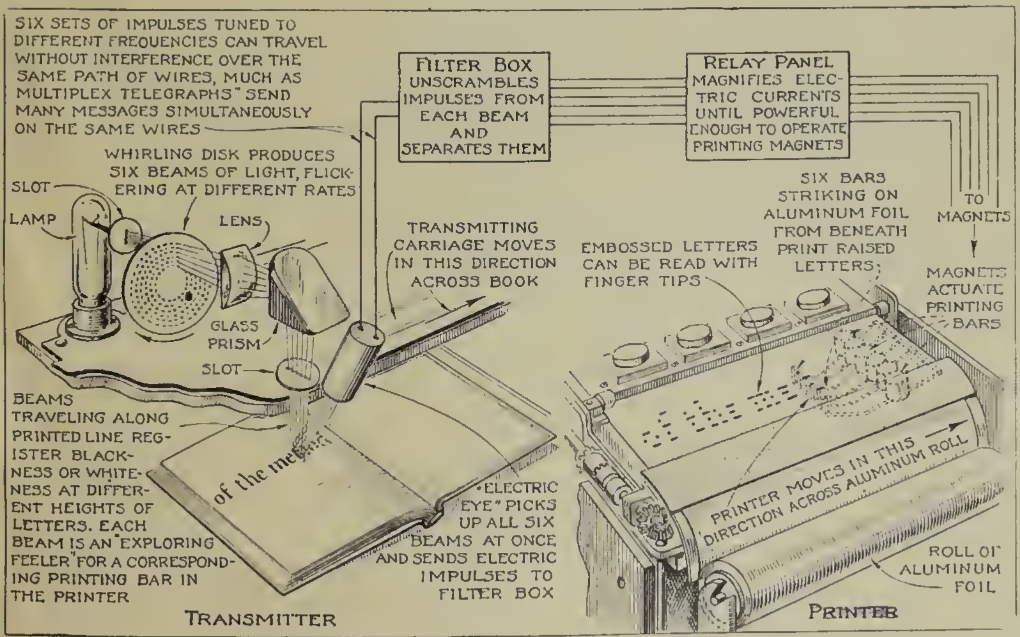
Though it took the inventor four years to perfect the printing visagraph to the point where it could read book type, he told Popular Science Monthly that he was constantly improving it. Soon, he says, it will be able to read magazines and typewritten letters. His most difficult problem was in finding a suitable recording medium. He found it in an aluminum sheet bearing a corrugated pattern, put there for ornament.





Above, Robert E. Naumburg, inventor of the printing visagraph by means of which the blind can read any printed book. At left, sample of raised letter it makes.




SIX SETS OF IMPULSES TUNED TO DIFFERENT FREQUENCIES CAN TRAVEL WITHOUT INTERFERENCE OVER THE SAME PATH OF WIRES, MUCH AS MULTIPLEX TELEGRAPHS SEND MANY MESSAGES SIMULTANEOUSLY ON THE SAME WIRES
FILTER BOX UNSCRAMBLES IMPULSES FROM EACH BEAM AND SEPARATES THEM
RELAY PANEL MAGNIFIES ELECTRIC CURRENTS UNTIL POWERFUL ENOUGH TO OPERATE PRINTING MAGNETS
WHIRLING DISK PRODUCES SIX BEAMS OF LIGHT, FLICKERING AT DIFFERENT RATES
SLOT
LAMP
LENS
TRANSMITTING CARRIAGE MOVES IN THIS DIRECTION ACROSS BOOK
EMBOSSED LETTERS CAN BE READ WITH FINGER TIPS
SIX BARS STRIKING ON ALUMINUM FOIL FROM BENEATH PRINT RAISED LETTERS
TO MAGNETS
MAGNETS ACTUATE PRINTING BARS
GLASS PRISM
SLOT
BEAMS TRAVELING ALONG PRINTED LINE REGISTER BLACKNESS OR WHITENESS AT DIFFERENT HEIGHTS OF LETTERS. EACH BEAM IS AN "EXPLORING FEELER" FOR A CORRESPONDING PRINTING BAR IN THE PRINTER
of the me
"ELECTRIC EYE" PICKS UP ALL SIX BEAMS AT ONCE AND SENDS ELECTRIC IMPULSES TO FILTER BOX
PRINTER MOVES IN THIS DIRECTION ACROSS ALUMINUM ROLL
ROLL OF ALUMINUM FOIL
TRANSMITTER
PRINTER

At top, inserting a book in the visagraph. Note the carriage holds the electric eye. Above, here is where the raised letters come up at the rate of twenty words a minute to be read with fingers. At left, diagram showing how the electric eye reads the printed type.

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